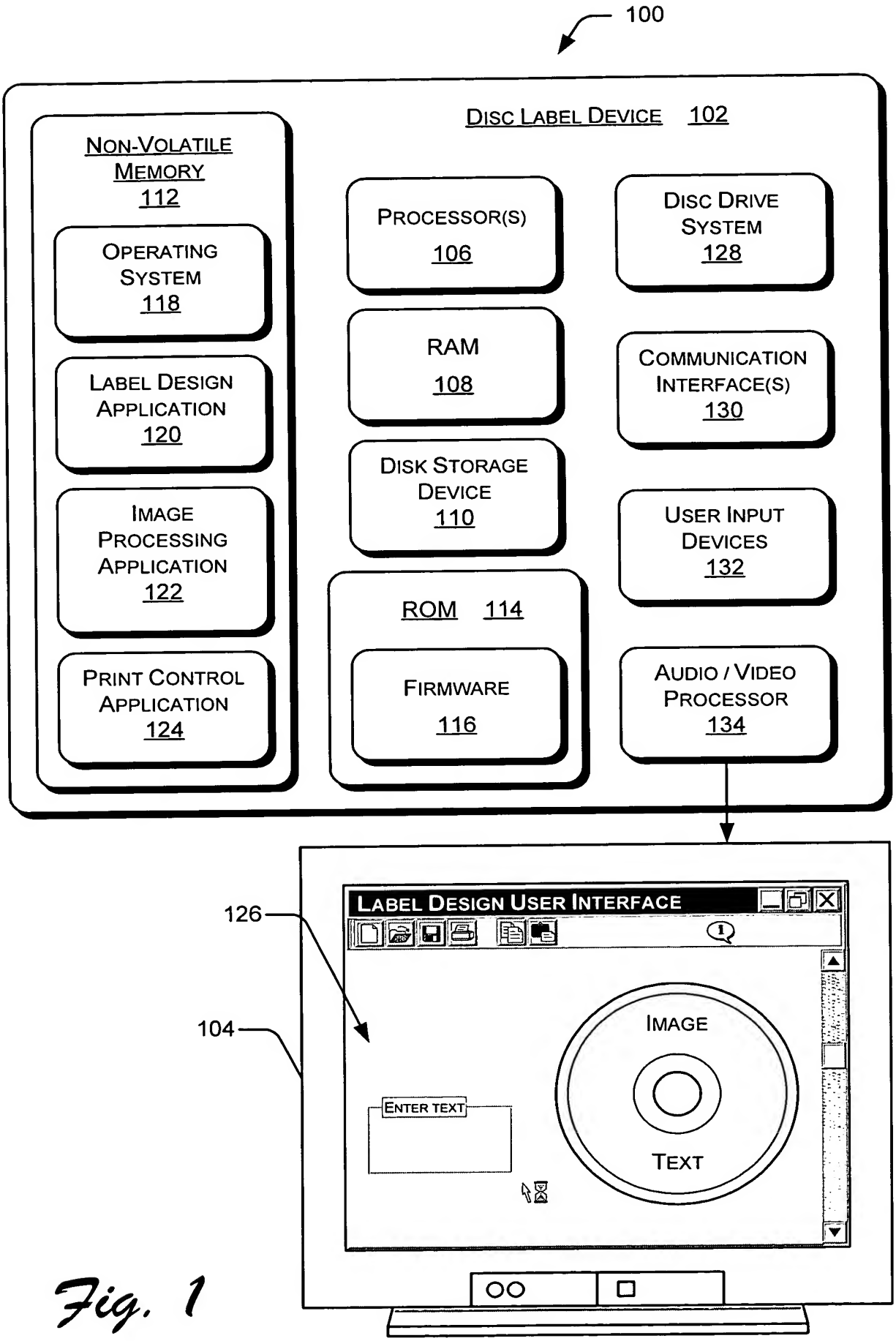
100
DISC LABEL DEVICE 102
NON-VOLATILE MEMORY 112
OPERATING SYSTEM 118
LABEL DESIGN APPLICATION 120
IMAGE PROCESSING APPLICATION 122
PRINT CONTROL APPLICATION 124
PROCESSOR(S) 106
RAM 108
DISK STORAGE DEVICE 110
ROM 114
FIRMWARE 116
DISC DRIVE SYSTEM 128
COMMUNICATION INTERFACE(S) 130
USER INPUT DEVICES 132
AUDIO / VIDEO PROCESSOR 134
126
104
LABEL DESIGN USER INTERFACE
IMAGE
ENTER TEXT
TEXT

Fig. 1

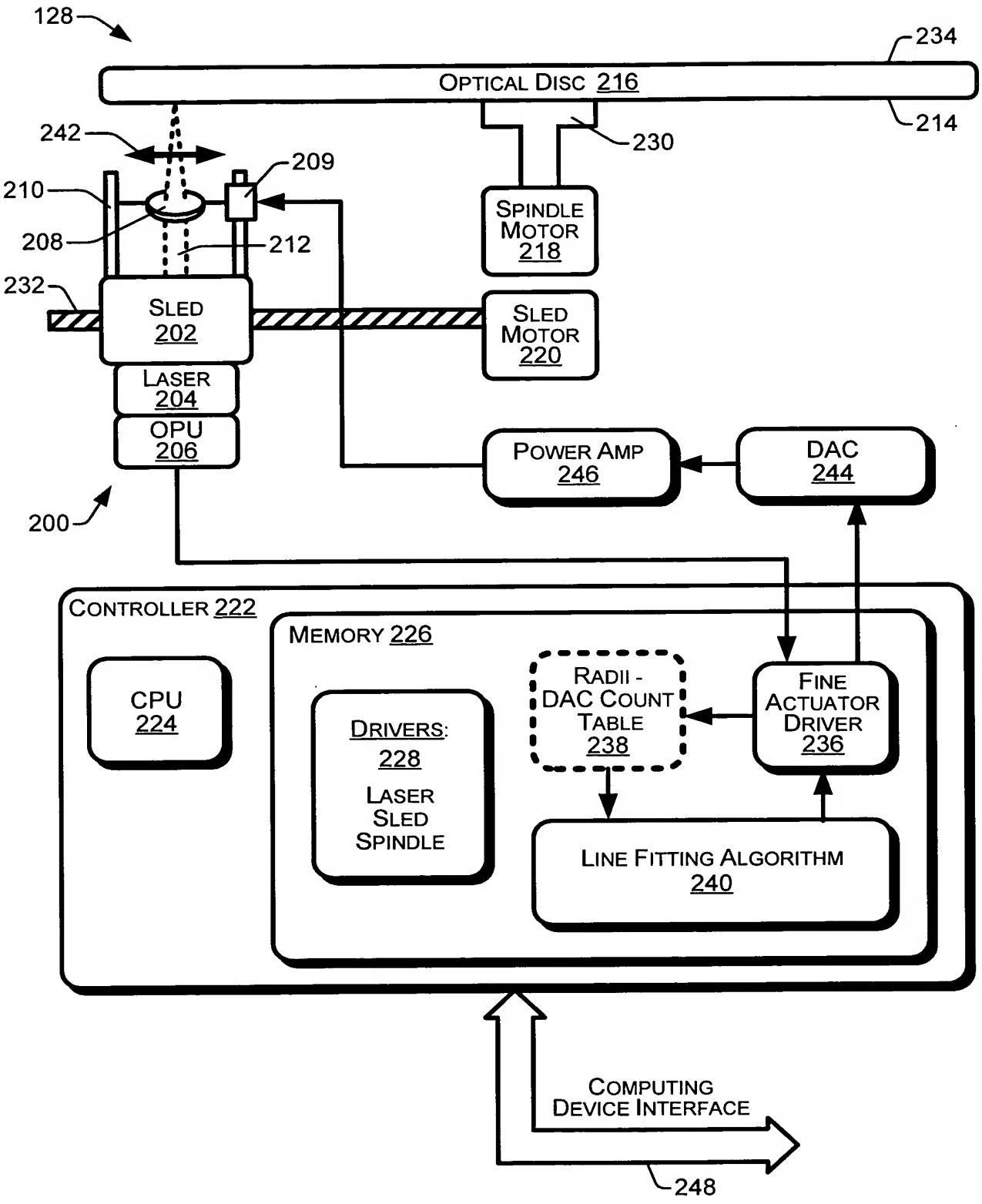
128
234
OPTICAL DISC 216
214
242
230
209
210
208
212
232
SPINDLE MOTOR 218
SLED 202
SLED MOTOR 220
LASER 204
OPU 206
POWER AMP 246
DAC 244
200
CONTROLLER 222
MEMORY 226
CPU 224
DRIVERS: 228
LASER
SLED
SPINDLE
RADII - DAC COUNT TABLE 238
FINE ACTUATOR DRIVER 236
LINE FITTING ALGORITHM 240
COMPUTING DEVICE INTERFACE
248

Fig. 2

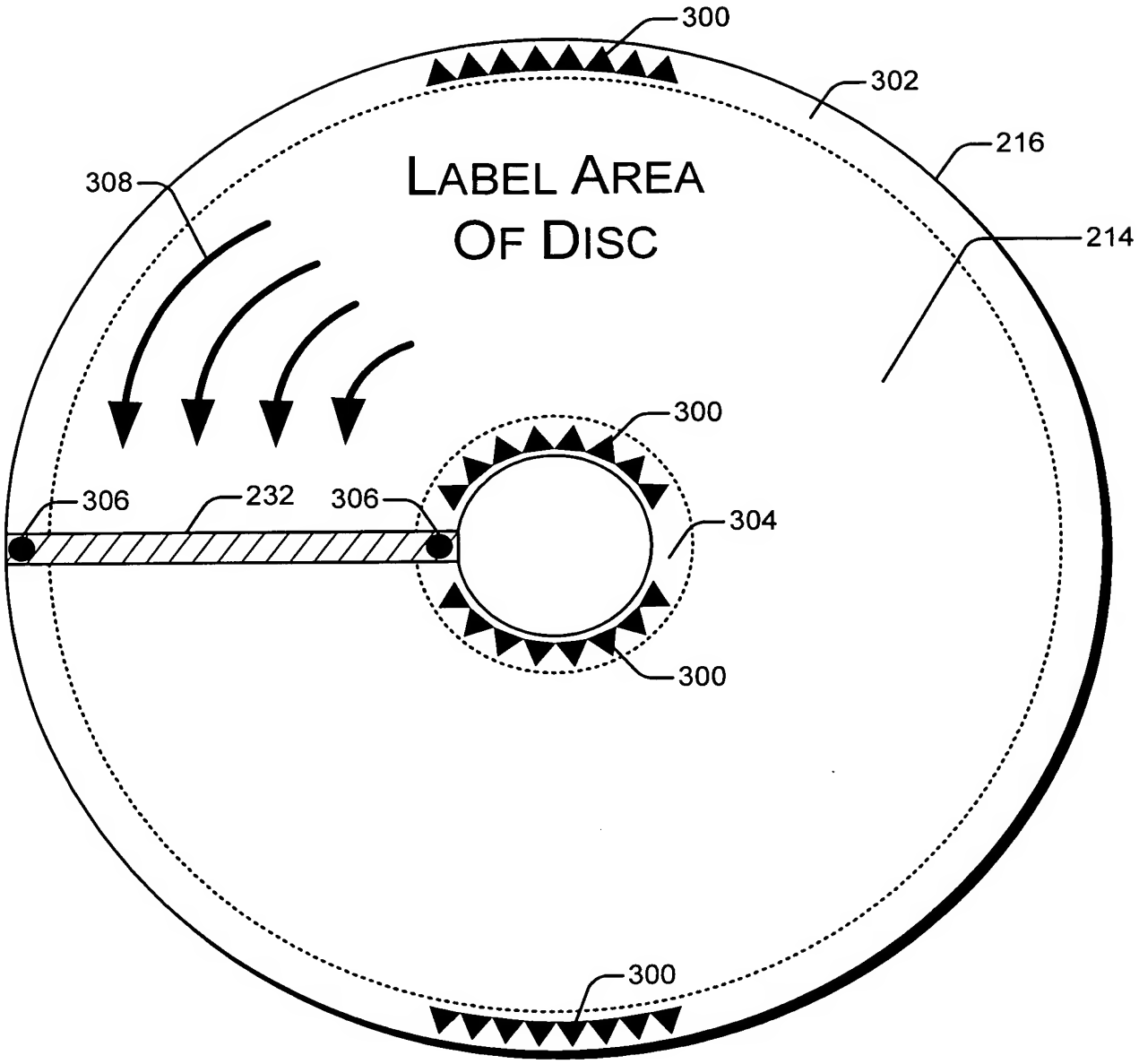
300
302
216
LABEL AREA
OF DISC
308
214
300
306
232
306
304
300
300

Fig. 3

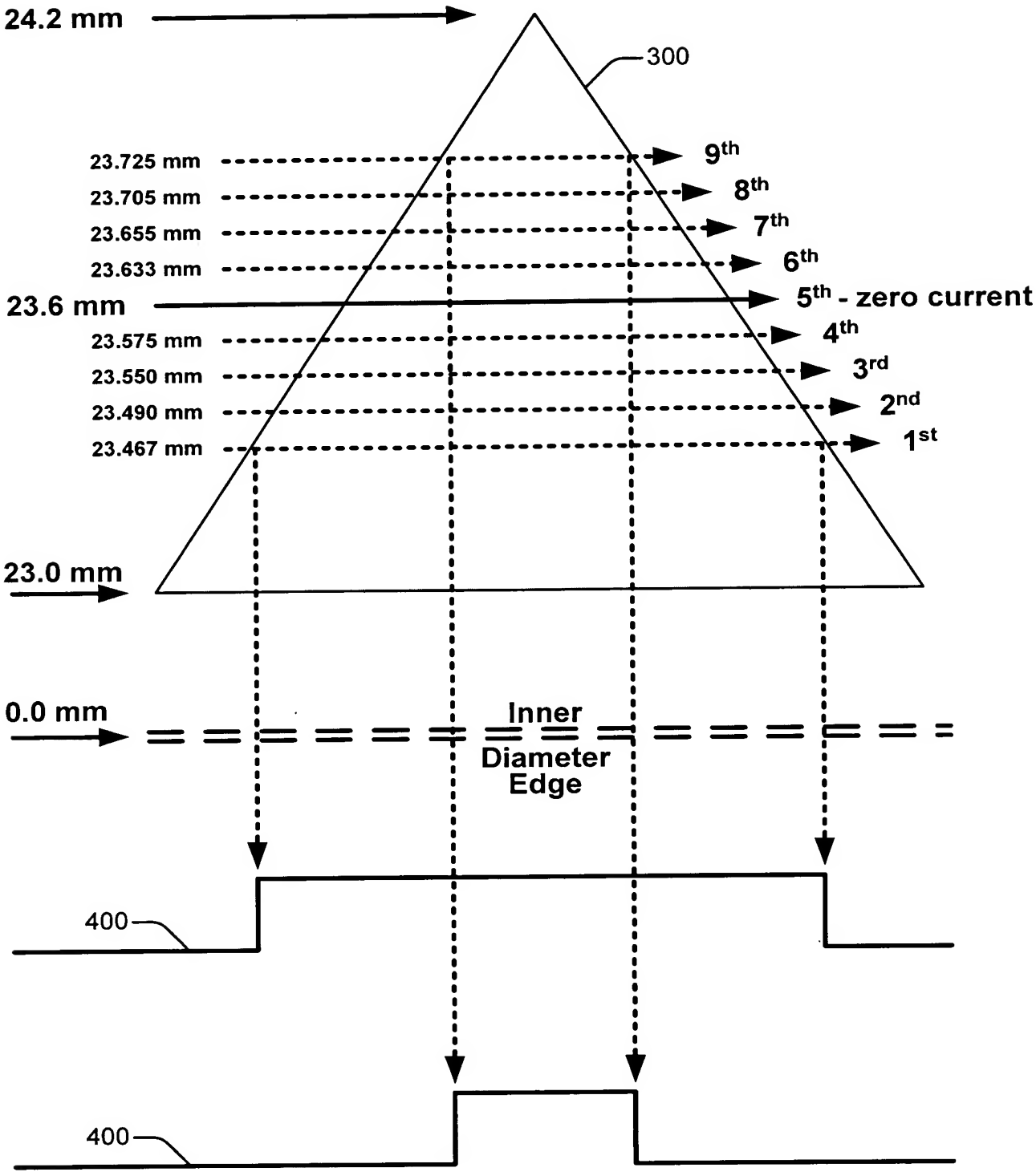
24.2 mm
300
23.725 mm
9th
23.705 mm
8th
23.655 mm
7th
23.633 mm
6th
23.6 mm
5th - zero current
23.575 mm
4th
23.550 mm
3rd
23.490 mm
2nd
23.467 mm
1st
23.0 mm
0.0 mm
Inner
Diameter
Edge
400
400

Fig. 4

RADII - DAC COUNT TABLE		
STEP #	DAC COUNT	RADIUS (mm)
1st	-400	23.467
2nd	-300	23.490
3rd	-200	23.550
4th	-100	23.575
5th	0	23.600
6th	100	23.633
7th	200	23.655
8th	300	23.705
9th	400	23.725

Fig. 5

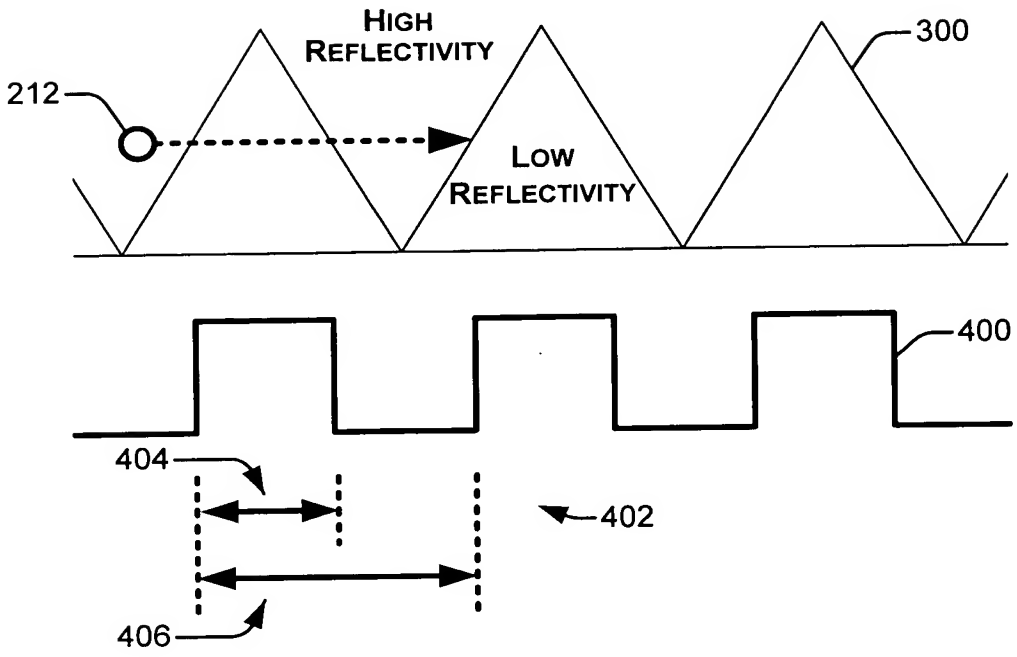
HIGH
REFLECTIVITY
212
LOW
REFLECTIVITY
300
400
404
402
406

Fig. 6

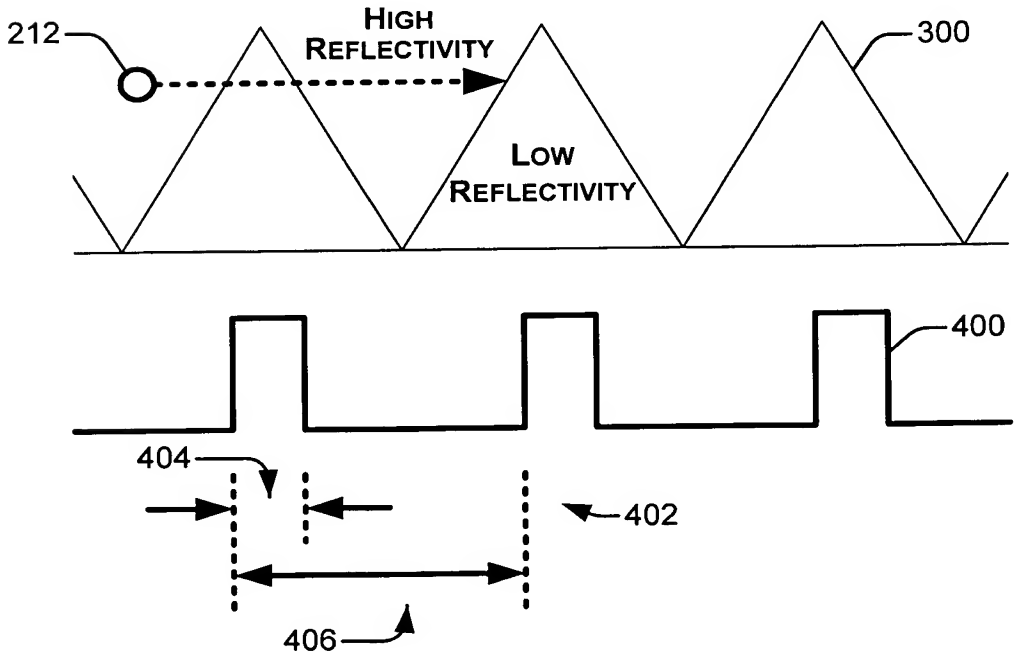
212
HIGH
REFLECTIVITY
300
LOW
REFLECTIVITY
400
404
402
406

Fig. 7

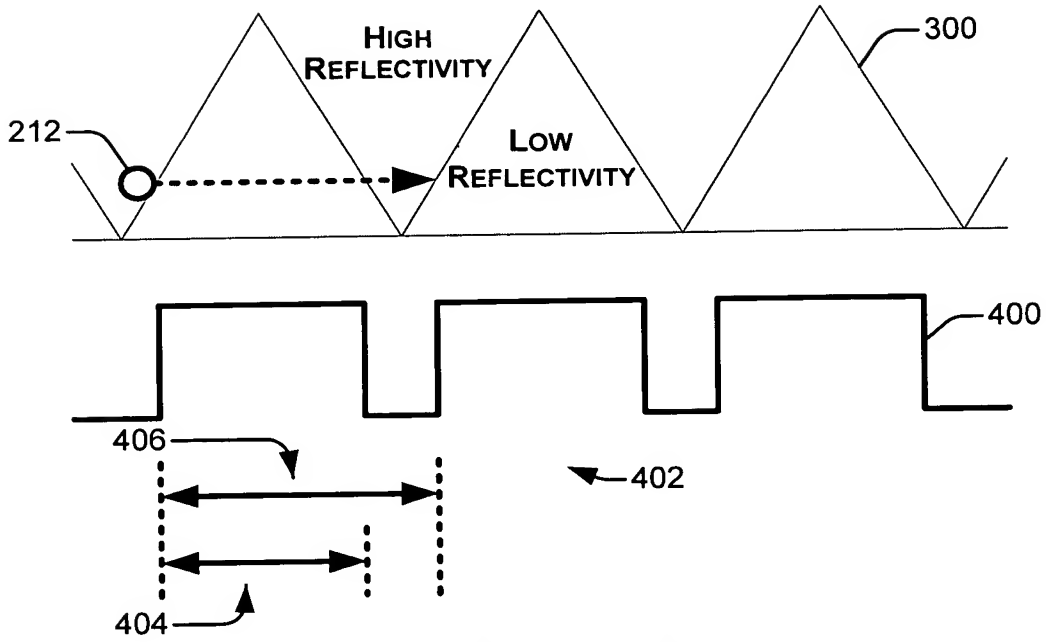

Fig. 8

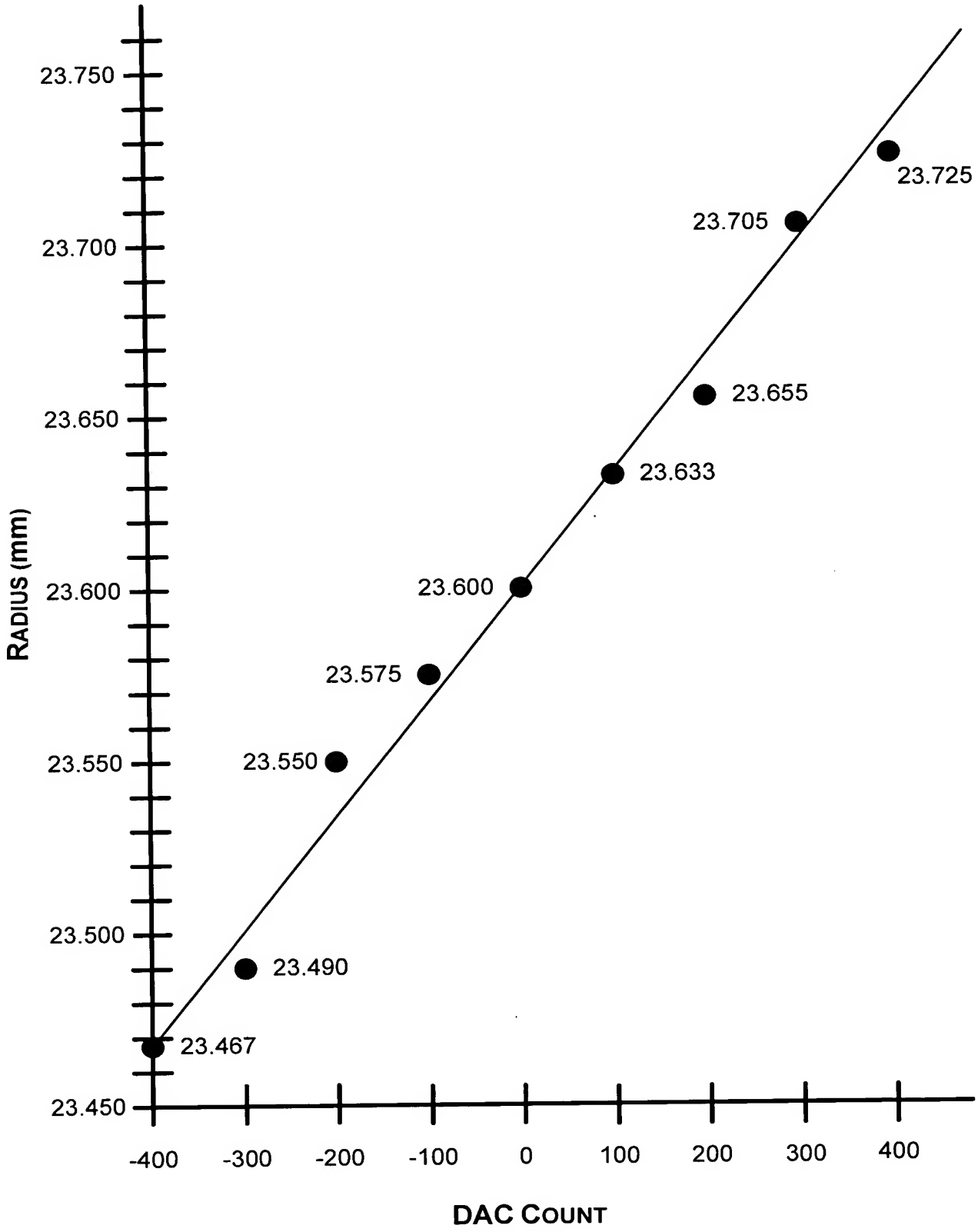
23.750
23.700
23.650
23.600
23.550
23.500
23.450
RADIUS (mm)
23.725
23.705
23.655
23.633
23.600
23.575
23.550
23.490
23.467
-400
-300
-200
-100
0
100
200
300
400
DAC COUNT

Fig. 9

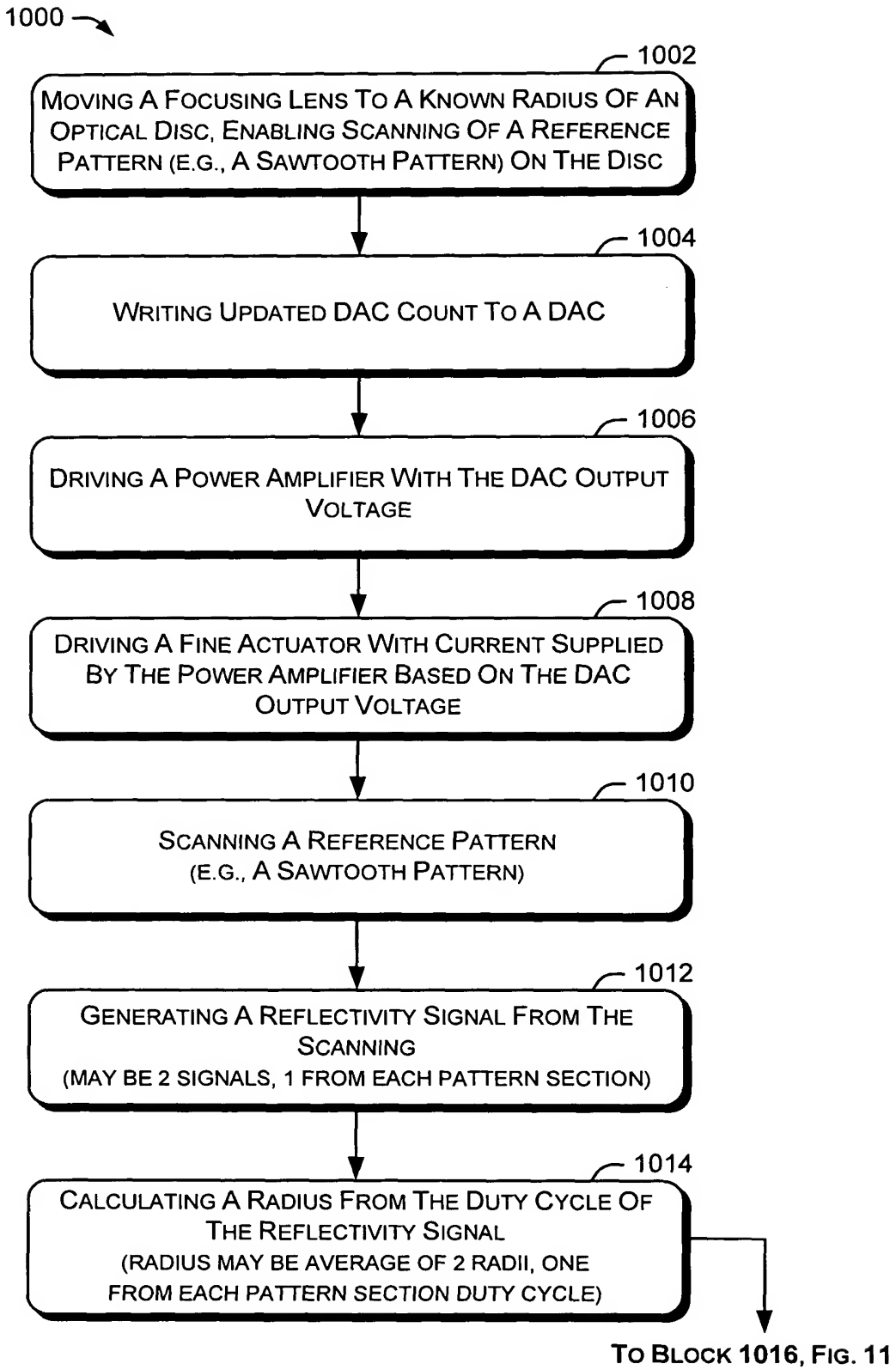
1000
1002
MOVING A FOCUSING LENS TO A KNOWN RADIUS OF AN OPTICAL DISC, ENABLING SCANNING OF A REFERENCE PATTERN (E.G., A SAWTOOTH PATTERN) ON THE DISC
1004
WRITING UPDATED DAC COUNT TO A DAC
1006
DRIVING A POWER AMPLIFIER WITH THE DAC OUTPUT VOLTAGE
1008
DRIVING A FINE ACTUATOR WITH CURRENT SUPPLIED BY THE POWER AMPLIFIER BASED ON THE DAC OUTPUT VOLTAGE
1010
SCANNING A REFERENCE PATTERN (E.G., A SAWTOOTH PATTERN)
1012
GENERATING A REFLECTIVITY SIGNAL FROM THE SCANNING (MAY BE 2 SIGNALS, 1 FROM EACH PATTERN SECTION)
1014
CALCULATING A RADIUS FROM THE DUTY CYCLE OF THE REFLECTIVITY SIGNAL (RADIUS MAY BE AVERAGE OF 2 RADII, ONE FROM EACH PATTERN SECTION DUTY CYCLE)
TO BLOCK 1016, FIG. 11

Fig. 10

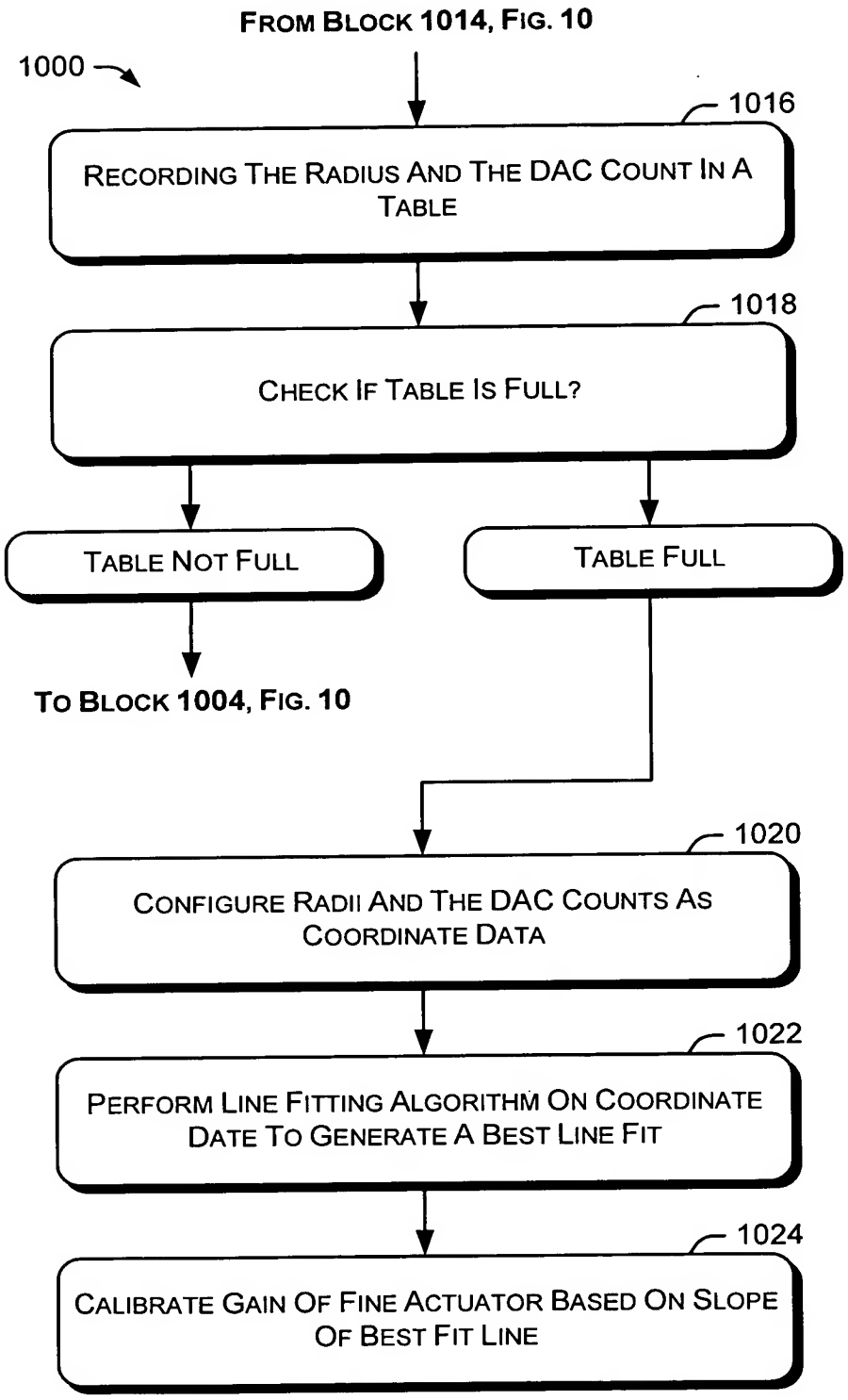
FROM BLOCK 1014, FIG. 10
1000
1016
RECORDING THE RADIUS AND THE DAC COUNT IN A TABLE
1018
CHECK IF TABLE IS FULL?
TABLE NOT FULL
TABLE FULL
TO BLOCK 1004, FIG. 10
1020
CONFIGURE RADII AND THE DAC COUNTS AS COORDINATE DATA
1022
PERFORM LINE FITTING ALGORITHM ON COORDINATE DATE TO GENERATE A BEST LINE FIT
1024
CALIBRATE GAIN OF FINE ACTUATOR BASED ON SLOPE OF BEST FIT LINE

Fig. 11